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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TAYLOR, BARRY W	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/779,606	SEALS ET AL.	
	Examiner	Art Unit	
	Barry W. Taylor	2617	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21,25-28 and 31-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21,25-28,31-40 and 43* is/are rejected.

7)☒ Claim(s) *41 and 42* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 21, 25-28, 31-40, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arvelo (7,082,107) in view of Harris et al (2006/0182030 hereinafter Harris) or Cooper et al (2004/0015765 hereinafter Cooper).

Regarding 21. Arvelo teachings a method for adjusting output power for a transmitter (title, abstract), the method comprising:

determining whether a first error rate associated with a transmission of a plurality of packets at a first output power exceeds a threshold error rate (abstract, figures 1 and

3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

responsive to the first error rate exceeding the threshold error rate, transmitting the plurality of packets at a second output power, wherein the second output power is less than the first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

determining whether a second error rate associated with the transmission of the plurality of packets at the second output power is less than the first error rate (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46).

Arvelo does not explicitly show responsive to the second error rate being less than the first error rate, dithering the output power for the transmitter below the first output power until a target error rate is achieved.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on

legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper teaches error rates are continuously compared to a target rate so transmit power can be adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an **<u>incremental and controlled manner</u>** (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing

interference as taught by Harris and to optimize throughput as taught by Cooper while maintaining error targets as taught by both Harris and Cooper.

Regarding claims 25 and 31. Arvelo teaches using ACKs and NACKs so the transmitter will know to re-transmit the data that had the error (col. 5 lines 20-50).

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate (i.e. **NAK's**) before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the ink and allowing retransmissions to be utilized on legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraph 0072).

Regarding claim 26. Arvelo teaches a method for adjusting output power for a transmitter (title, abstract), the method comprising:

transmitting a plurality of packets at a first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

determining a first error rate associated with the transmission of the plurality of packets at the first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line

49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

comparing the first error rate to a predetermined error rate value (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46); and

responsive to the first error rate being greater than the predetermined error rate value, transmitting the plurality of packets at a second output power, wherein the second output power is less than the first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

determining a second error rate associated with the transmission at the second output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

transmitting the plurality of packets at a third output power, wherein the third output power is greater than the second output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

determining a third error rate associated with the transmission at the third output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46).

Arvelo does not explicitly show based at least in part on a comparison between the first error rate, the second error rate, and the third error rate, setting the output power for the transmitter.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper teaches error rates are continuously compared to a target rate so transmit power can be adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an

incremental and controlled manner (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing interference as taught by Harris and to optimize throughput as taught by Cooper while maintaining error targets as taught by both Harris and Cooper.

Regarding claim 27. Arvelo does not explicitly teach wherein setting the output power for the transmitter comprises, if the second error rate is less than the first error rate and the third error rate, then adjusting the second output power until a desired error rate is reached.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third

and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper teaches error rates are continuously compared to a target rate so transmit power can be adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an **<u>incremental and controlled manner</u>** (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing interference as taught by Harris and to optimize throughput as taught by Cooper while **maintaining error targets as taught by both Harris and Cooper**.

Regarding claim 28. Arvelo does not explicitly show wherein setting the output power for the transmitter comprises, if the third error rate is less than the first error rate and the second error rate, then adjusting the third output power until a desired error rate is reached.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper teaches error rates are continuously compared to a target rate so transmit power can be adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an **incremental and controlled manner** (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing interference as taught by Harris and to optimize throughput as taught by Cooper while **maintaining error targets as taught by both Harris and Cooper**.

Regarding claim 32. Arvelo teaches transmission at the first output power and second output power is associated with a variable data rate (title, abstract, col. 3 lines

12-13, col. 3 line 49 - col. 4 line 65, col. 5 lines 20-61, col. 7 lines 4-12, col. 10 lines 37-46).

Harris also teaches adjusting output power or error targets (paragraphs 0068, 0072).

Cooper also teaches adjusting output power to match target rates (abstract, paragraphs 0008, 0025, 0028, 0047, 0054).

Regarding claim 33. Arvelo teaches wherein the first error rate, the second error rate and the predetermined error rate value are associated with the variable data rate (title, abstract, col. 3 lines 12-13, col. 3 line 49 - col. 4 line 65, col. 5 lines 20-61, col. 7 lines 4-12, col. 10 lines 37-46).

Harris also teaches adjusting output power or error targets (paragraphs 0068, 0072).

Cooper also teaches adjusting output power to match target rates (abstract, paragraphs 0008, 0025, 0028, 0047, 0054).

Regarding claim 34. Arvelo teaches transmission at the first output power and second output power is associated with a variable data rate (title, abstract, col. 3 lines 12-13, col. 3 line 49 - col. 4 line 65, col. 5 lines 20-61, col. 7 lines 4-12, col. 10 lines 37-46).

Harris also teaches adjusting output power or error targets (paragraphs 0068, 0072).

Cooper also teaches adjusting output power to match target rates (abstract, paragraphs 0008, 0025, 0028, 0047, 0054).

Regarding claim 35. Arvelo teaches wherein the first error rate, the second error rate and the predetermined error rate value are associated with the variable data rate (title, abstract, col. 3 lines 12-13, col. 3 line 49 - col. 4 line 65, col. 5 lines 20-61, col. 7 lines 4-12, col. 10 lines 37-46).

Harris also teaches adjusting output power or error targets (paragraphs 0068, 0072).

Cooper also teaches adjusting output power to match target rates (abstract, paragraphs 0008, 0025, 0028, 0047, 0054).

Regarding claim 36. Arvelo teaches a system for adjusting output power for a transmitter (title, abstract), the system comprising:

a transmitter configured to transmit a plurality of packets at a first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46); and

a processor configured to perform at least the following: determine a first error rate associated with the transmission of the plurality of packets at the first output power; determine whether the first error rate is greater than a predetermined error rate; responsive to the first error rate being greater than the predetermined error rate, cause the transmitter to transmit the plurality of packets at a second output power, wherein the second output power is less than the first output power; determine a second error rate associated with the transmission at the second output power; cause the transmitter to transmit the plurality of packets at a third output power, wherein the third output power is greater than the output power; determine a third error rate associated with the

transmission at the third output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46).

Arvelo does not explicitly show identify a desired output power based at least in part on a comparison between the first error rate~ ~ the second error rate~ and a comparison between the second error rate and the third error rate.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper teaches error rates are continuously compared to a target rate so transmit power can be

adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an **incremental and controlled manner** (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing interference as taught by Harris and to optimize throughput as taught by Cooper while maintaining error targets as taught by both Harris and Cooper.

Regarding claim 37. Arvelo teaches a system for adjusting output power for a transmitter (title, abstract), the system comprising:

means for transmitting a plurality of packets at a first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

means for determining a first error rate associated with the transmission of the plurality of packets at the first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

means for transmitting the plurality of packets at a second output power, wherein the second output power is less than the first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

means for determining a second error rate associated with the transmission at the second output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

means for transmitting the plurality of packets at a third output power, wherein the third output power is greater than the first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

means for determining a third error rate associated with the transmission at the third output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46).

Arvelo does not explicitly show means for identifying a desired output power based at least in part on a comparison between the first error rate, the second error rate, and the third error rate.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper teaches error rates are continuously compared to a target rate so transmit power can be adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an **incremental and controlled manner** (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be

decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing interference as taught by Harris and to optimize throughput as taught by Cooper while maintaining error targets as taught by both Harris and Cooper.

Regarding claim 38. Arvelo does not explicitly show means for identifying the second output power as a desired output power if the second error rate is lower than at least the third error rate; and means for identifying the third output power as the desired output power if the third error rate is lower than at least the second error rate.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on

legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper teaches error rates are continuously compared to a target rate so transmit power can be adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an **incremental and controlled manner** (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing

interference as taught by Harris and to optimize throughput as taught by Cooper while maintaining error targets as taught by both Harris and Cooper.

Regarding claim 39. Applicants define 802.11 protocol to be technique that requires feedback from the receiver to adjust the transmitter (see Applicants specification page 2, lines 13-15). Arvelo teaches receiver sending ACK or NACK to transmitter so the transmitter will know to re-transmit the data that had the error (col. 5 lines 21-50). Harris also teaches ACK's and NAK's (paragraphs 0065-0068).

Regarding claim 40. Program claim 40 is rejected for the same reasons as method claim 21 and system claim 36 since the recited apparatus and method would perform the claimed program steps.

Regarding claim 43. Arvelo teaches a method for adjusting output power for a transmitter (title, abstract), the method comprising:

determining whether a first error rate associated with a transmission of a plurality of packets at a first output power exceeds a threshold error rate (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

responsive to the first error rate exceeding the threshold error rate, transmitting the plurality of packets at a second output power, wherein the second output power is less than the first output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46);

determining a second error rate associated with the transmission at the second output power (abstract, figures 1 and 3, col. 3 lines 12-33 col. 3 line 49 - col. 4 line 65, col. 5 lines 21-61, col. 7 lines 4-11, col. 7 lines 30-52, col. 10 lines 37-46).

Arvelo does not explicitly show based at least in part on a comparison of the first error rate and the second error rate, determining that transmission distortion is a cause of the first error rate exceeding the threshold error rate; and responsively setting the output power for the transmitter below the first output power.

Harris also teaches a method and apparatus to adjust output power for re-transmission of packets (paragraph 0065). Harris teaches first and second error rates are used to determine a transmit output power (paragraph 0066). Harris even teaches the use of a third error rate before determining a transmit output power (paragraph 0067). More importantly, Harris teaches comparing a first, second, or additionally third and fourth error rates (paragraph 0068) to determine how to adjust the transmit output power. In this way the system can maintain an overall error rate or abort rate by individually adjusting each leg of the link and allowing retransmissions to be utilized on legs that can best afford retransmissions and transmissions may be made at higher power levels on legs where the transmissions will least interfere with other communications (see last nine lines of paragraph 0068 and paragraphs 0071 and 0072).

Cooper also teaches continuously comparing bit error rates to a target bit error rate over a wireless communications network (paragraphs 0002, 0047) so that transit power may be increased or decreased to provide greater throughput (abstract). Cooper

teaches error rates are continuously compared to a target rate so transmit power can be adjusted to match changes in channel conditions (paragraph 0008). Cooper teaches an algorithm is used to compare predetermined channel performance metrics which include error rates (paragraph 0025) in order to change transmit power in an **incremental and controlled manner** (paragraphs 0028, 0047, 0054). In other words, when the calculated error rate is less than the target error rate, meaning that fewer errors are occurring on the channel than the target number of errors, power can be decreased in order to allow the calculated error rate to increase to match the target error rate and if there are more errors occurring on the channel than the target number of errors, power can be increased in order to allow the calculated error rate to decrease to match the target error rate (paragraph 0047).

It would have been obvious for any one of ordinary skill in the art at the time of invention to modify the power control method and system as taught by Arvelo to compare error rates as taught by Harris or Cooper in order to provide a means for the transmitter to incrementally adjust power levels for transmission thereby minimizing interference as taught by Harris and to optimize throughput as taught by Cooper while maintaining error targets as taught by both Harris and Cooper.

Allowable Subject Matter

2. Claims 41-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

3. Applicant's arguments with respect to claims 21, 25-28, 31-40, and 43 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

---(2003/0109274) Budka et al is considered pertinent for using error rates and ACK/NACK in order to adjust power up and/or down to maintain particular error rate (paragraphs 0014-0015, 0039-0059, 0065-0077, 0079, 0085, 0090, 0100, 0102, 0105, 0115-0116, 0151, 0199, 0202).

---(6,741,866) Gustavsson is considered pertinent for dithering output power until predetermined value reached, whereupon the output power is dithered back to a **nominal** level again (abstract, col. 5 lines 45-56, col. 6 lines 58-64).

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry W. Taylor, telephone number (571) 272-7509, who is available Monday-Thursday, 6:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kent Chang, can be reached at (571) 272-7667. The central facsimile phone number for this group is **571-273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2600 receptionist whose telephone number is (571) 272-2600, the 2600 Customer Service telephone number is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Centralized Delivery Policy: For patent related correspondence, hand carry deliveries must be made to the Customer Service Window (now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314), and facsimile transmissions must be sent to the central fax number **(571-273-8300).**

/Barry W Taylor/

Primary Examiner, Art Unit 2617